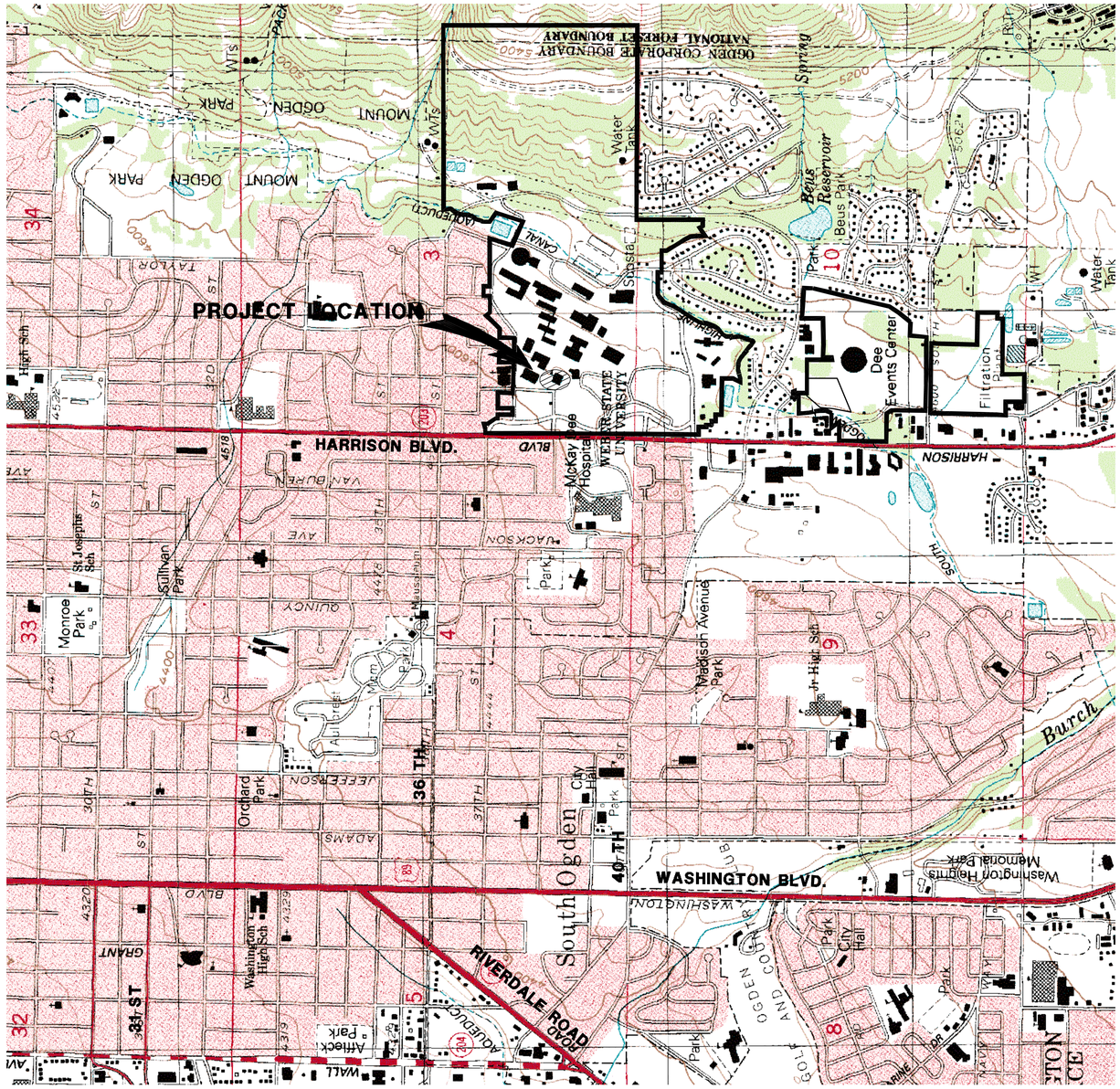
WEBER STATE UNIVERSITY

IRRIGATION AND LANDSCAPE IMPROVEMENTS - PHASE 4



VICINITY MAP

SHEET INDEX:

LANDSCAPE ARCHITECT

BINGHAM ENGINEERING
5160 WILEY POST WAY
SALT LAKE CITY, UTAH 84116
(801) 532-2520

RKC 05/17/2005 P:\4357\4357-PROJECT\dwg\4357COVER.dwg

STUDENT SERVICE CENTER

ADMINISTRATION

4640

4620

RKING

ATION

NOTES:

BASE BID

1. REMOVE EXISTING TREE, INCLUDING ALL SURFACE ROOTS AND STUMP. DISPOSE OF OFF-SITE IN A LEGAL MANNER.
2. REMOVE EXISTING TURF. PREPARE AREA FOR BECOMING SHRUB BED BY REMOVING THE APPROPRIATE AMOUNT OF EXISTING SOIL NECESSARY TO ACCOMMODATE 12 INCHES OF IMPORTED TOPSOIL.
3. REMOVE EXISTING SHRUBS, INCLUDING ALL GROUNDCOVER. DISPOSE OF REMOVED MATERIAL OFF-SITE IN A LEGAL MANNER. PREPARE AREA FOR NEW IRRIGATION AND SHRUB PLANTINGS BY REMOVING ALL UNEARTHED PIPE, SLEEVING, OR OTHER EXTRANEOUS MATTER. INSURE THAT BEDS HAVE ADEQUATE TOPSOIL AND ARE BROUGHT TO THE APPROPRIATE GRADE (TOPSOIL AT 5" BELOW EDGE OF WALK OR WALL).
4. REMOVE EXISTING WOOD EDGING.
5. SAVE AND PROTECT EXISTING TREES NOT DESIGNATED TO BE REMOVED.

0 20 40 60
Scale in Feet

STATE OF UTAH
GREGORY H. GRAVES
10441
CERTIFIED LANDSCAPE ARCHITECT

Rev.	By	Date	Remarks
0	GHG	4/15/05	ISSUED FOR BID
1	GHG	4/4/05	ISSUED FOR REVIEW

WEBER STATE UNVERSITY

LANDSCAPE IMPROVEMENTS
PHASE 4
ADMINISTRATION BUIDING
DEMOLITION PLAN

BINGHAM ENGINEERING
SALT LAKE CITY - (801) 532-2520
OGDEN - (801) 399-1662

Dsn: GHG
Drw: GHG
Chk: JRL
Rvw: RW

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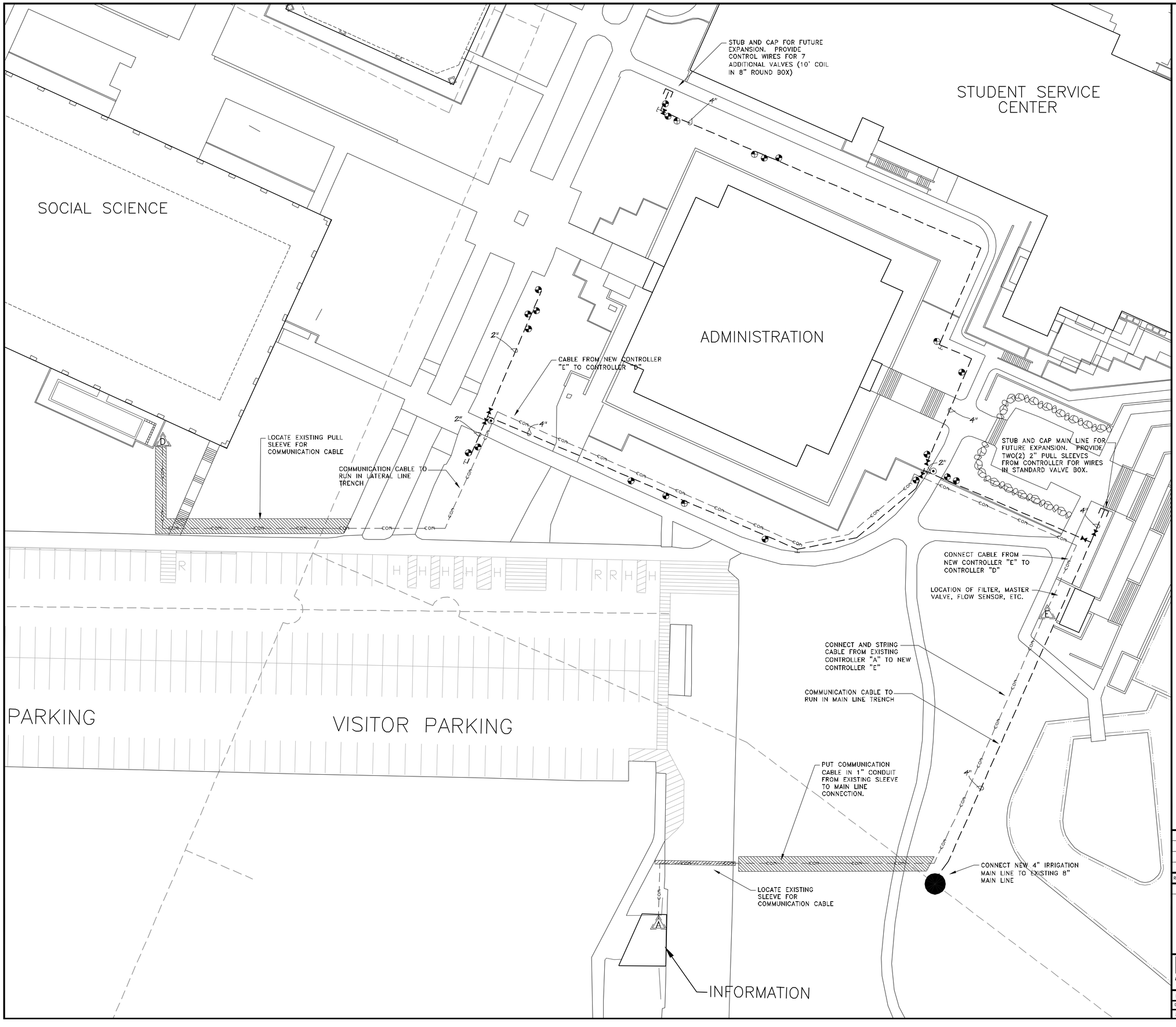
RKC



NOTES:

1. CONTRACTOR SHALL NOT GROUP IRRIGATION CONTROL VALVES TOGETHER IN BANKS. WHERE POSSIBLE, VALVE PLACEMENT SHALL BE IN SHRUB BEDS.

2. IRRIGATION PLAN IS DIAGRAMMATIC. ALL IRRIGATION EQUIPMENT SHALL BE LOCATED IN PLANTING AREAS ONLY, UNLESS NOTED OTHERWISE. REFER TO THE IRRIGATION LEGEND, DETAILS, AND SPECIFICATIONS FOR EQUIPMENT AND INSTALLATION.

0 20 40 60
Scale In Feet

LICENSED LANDSCAPE ARCHITECT (AND TURF GRADE CONTRACTOR) 4812827 DATE STATE OF UTAH

Rev.	By	Date	Remarks
0	GHG	4/15/05	ISSUED FOR BID
1	GHG	4/4/05	ISSUED FOR REVIEW

WEBER STATE UNIVERSITY

LANDSCAPE IMPROVEMENTS
PHASE 4
ADMINISTRATION BUILDING
MAIN LINE LAYOUT

BINGHAM ENGINEERING
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Chk: JRL
Rvw: RW

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STUDENT SERVICE CENTER

ADMINISTRATION

VISITOR PARKING

STUB AND CAP FOR FUTURE EXPANSION. PROVIDE WIRES FOR 7 ADDITIONAL VALVES (10' COIL IN 8" ROUND BOX)

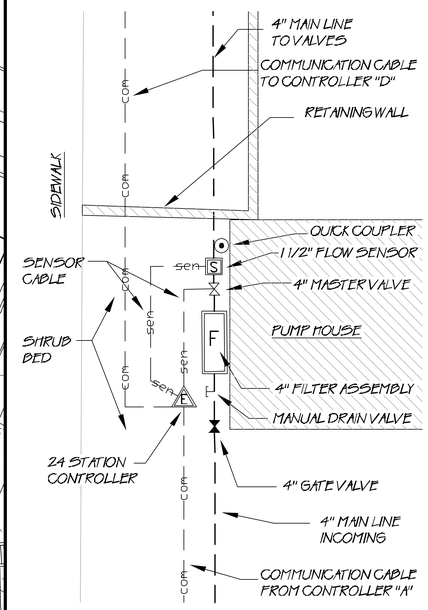
E14 4.0 1"
E17 6.5 1"
E18 22.0 1 1/4"
E19 25.0 1 1/4"
E16 3.0 1"
E15 31.5 1"
E13 22.5 1 1/4"
E12 17.0 1"
E11 6.5 1"
E10 8.0 1"
E9 13.0 1"
E8 19.0 1"
E6 33.0 1 1/4"
E7 46.5 1 1/2"
E5 6.5 1"
E3 33.5 1 1/4"
E22 35 1 1/4"
E20 5.5 1"
E21 27.5 1 1/4"
E2 29.5 1 1/4"
E1 42.5 1 1/2"
E4 14.5 1"

USE EXISTING SLEEVES
3" SLEEVE
6" MAIN LINE SLEEVE 2" WIRE SLEEVE
4" SLEEVE
2" SLEEVE FOR COMMUNICATION CABLE
2" SLEEVE
USE EXISTING SLEEVES 2 1/2" SLEEVE
STUB AND CAP MAIN LINE FOR FUTURE EXPANSION. PROVIDE TWO(2) 2" PULL SLEEVES FROM CONTROLLER FOR WIRES IN STANDARD VALVE BOX.
IRRIGATION CONTROL AREA, SEE DETAIL TO RIGHT.
CONNECT NEW 4" IRRIGATION MAIN LINE TO EXISTING 8" MAIN LINE

NOTES:

1. CONTRACTOR SHALL NOT GROUP IRRIGATION CONTROL VALVES TOGETHER IN BANKS. WHERE POSSIBLE, VALVE PLACEMENT SHALL BE IN SHRUB BEDS.

2. IRRIGATION PLAN IS DIAGRAMMATIC. ALL IRRIGATION EQUIPMENT SHALL BE LOCATED IN PLANTING AREAS ONLY, UNLESS NOTED OTHERWISE. REFER TO THE IRRIGATION LEGEND, DETAILS, AND SPECIFICATIONS FOR EQUIPMENT AND INSTALLATION.



A **IRRIGATION MECHANICAL DETAIL**
NTS

0 20 40 60
Scale In Feet

LICENSED LANDSCAPE ARCHITECT 4812827 DATE STATE OF UTAH

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WEBER STATE UNVERSITY

LANDSCAPE IMPROVEMENTS
PHASE 4
ADMINISTRATION BUIDING
IRRIGATION PLAN

BINGHAM ENGINEERING
SALT LAKE CITY - (801) 532-2520
OGDEN - (801) 399-1662

Dsn: RKC
Drw: RKC
Chk: JRL
Rvw: RW

Sht L-3 of 9

Print Date: 05/17/2005
Created: 3/17/05
Proj. # 4357

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IRRIGATION NOTES

1. IRRIGATION PLAN IS DIAGRAMMATIC. ALL IRRIGATION EQUIPMENT SHALL BE LOCATED IN PLANTING AREAS ONLY, UNLESS NOTED OTHERWISE. REFER TO THE IRRIGATION LEGEND, DETAILS, AND SPECIFICATIONS FOR EQUIPMENT AND INSTALLATION. SPECIFICATIONS SHALL TAKE PRECEDENCE OVER INSTALLATION DETAILS.

LANDSCAPE CONTRACTOR SHALL VERIFY LOCATION OF IRRIGATION POINT OF CONNECTION (POC) AND THE STATIC WATER PRESSURE AT THAT LOCATION PRIOR TO BEGINNING ANY IRRIGATION WORK. IF THE LOCATION OR WATER PRESSURE IS DIFFERENT THAN THAT EXPRESSED BY THE LANDSCAPE ARCHITECT, OR IF THE PRESSURE APPEARS TO BE UNUSUALLY HIGH OR LOW, THE CONTRACTOR SHALL NOTIFY THE LANDSCAPE ARCHITECT IMMEDIATELY.

3. CONTRACTOR SHALL KEEP THE PREMISES CLEAN AND FREE OF EXCESS EQUIPMENT, MATERIALS AND RUBBISH INCIDENTAL TO WORK OF THIS SECTION.

4. PIPE FITTINGS SHALL BE AS FOLLOWS:
A. ALL RISERS AND EXPOSED FITTINGS SHALL BE P.V.C. SCHEDULE 80.
B. ALL UNDERGROUND FITTINGS SHALL BE P.V.C. SCHEDULE 40.
C. ALL MAIN LINE TWO AND HALF (2 ½) INCH OR GREATER SHALL USE DUCTILE IRON FITTINGS. ALL MAINLINE TWO (2) INCH OR SMALLER SHALL USE PVC FITTINGS.

5. IRRIGATION CONTROL WIRES SHALL CONFORM TO THE FOLLOWING:
A. ALL WIRE SHALL BE TYPE UF, 600 VOLT, SOLID COPPER , SINGLE CONDUCTOR WIRE. IT SHALL BE UL LISTED, DIRECT BURIAL TYPE, AND MINIMUM SIZE OF 14 GAUGE. ALL SPLICES AND CONNECTIONS SHALL BE WATER-TIGHT. ALL WIRES SHALL BE INSTALLED WITH TWO (2) FEET OF EXCESS WIRE (COILED) AT THE END OF EACH WIRE RUN, WIRE SPLICE, AND AT EACH CONTROLLER.
B. CONTROL WIRE SHALL BE BUNDLED EVERY 10' AND PLACED ADJACENT TO MAIN LINE. ALL WIRE SPLICES SHALL BE LOCATED IN VALVE BOXES.

6. FILTER SHALL BE INSTALLED PER DETAIL SHOWN. PROVIDE PERMANENTLY ATTACHED HOSE (10' LENGTH) FROM FILTER EXHAUST PORT TO DIRECT FLUSHING WATER AWAY FROM FILTER ASSEMBLY AND TOWARDS APPROPRIATE DRAINAGE LOCATION.

7. MANUAL DRAIN VALVES SHALL BE PLACED ON THE MAIN LINE AT ALL LOW SPOTS TO ENSURE COMPLETE DRAINAGE AND WINTERIZATION OF MAIN LINE. ALL MANUAL DRAINS SHALL BE PLACE IN SEPARATE VALVE BOXES PER INSTALLATION DETAILS.

8. CHECK VALVES SHALL BE USED WHERE INDICATED AND WHERE NECESSARY TO PREVENT WATER FLOW FROM LOWER ELEVATION HEADS WHEN SYSTEM IS TURNED OFF. INSTALL PER MANUFACTURE'S RECOMMENDATION, WITH A ONE (1) CU. FT. MIN. GRAVEL SUMP AROUND EACH CHECK VALVE. .

9. ALL POP-UP SPRAY SPRINKLERS SHALL CONFORM TO THE FOLLOWING UNLESS SPECIFICALLY NOTED OTHERWISE ON THE PLANS:
A. SPRINKLERS LOCATED IN GRASS AREAS SHALL BE FOUR (4) INCHES IN HEIGHT.
B. SPRINKLERS LOCATED IN PLANTING BEDS SHALL BE TWELVE (12) INCHES IN HEIGHT.

10. ALL PRESSURE MAIN LINES SHALL BE EIGHTEEN (18) INCHES TO THIRTY (30) INCHES DEEP, AND ALL LATERAL LINES SHALL BE EIGHT (8) INCHES TO FOURTEEN (14) INCHES DEEP. TRENCH BEDDING AND BACKFILL MATERIAL SHALL BE EXISTING SITE SOIL FREE OF ROCKS, DEBRIS, ETC. GREATER THAN ONE (1) INCH IN ANY DIMENSION THAT MAY DAMAGE IRRIGATION PIPE OR EQUIPMENT. IN THE EVENT OF BACKFILL SETTLEMENT, CONTRACTOR SHALL PERFORM REQUIRED REPAIRS AT HIS OWN COST.

11. WHERE POSSIBLE, ALL AUTOMATIC CONTROL VALVES SHALL BE LOCATED WITHIN SHRUB AREAS AND INSTALLED IN GREEN VALVE BOXES, ONE VALVE PER BOX, WITH FOUR (4) INCHES OF 3/4" GRAVEL BENEATH THE VALVE. NO VALVE MANIFOLDS SHALL BE ALLOWED. GATE VALVES SHALL BE LOCATED IN SEPARATE VALVE BOXES. WIRE SPLICES SHALL ALSO BE LOCATED IN SEPARATE VALVE BOXES.

12. ALL MAIN LINE AND LATERAL LINES SHALL BE SLEEVED WITH P.V.C. SCHEDULE 40 PIPE (4" AND UNDER) OR CLASS 200 (GREATER THAN 4") WHERE THEY PASS UNDER PAVED AREAS. SLEEVE SIZE SHALL BE TWICE THE DIAMETER OF THE LINE TO BE SLEEVED UNLESS OTHERWISE NOTED ON THE PLANS.

13. AUTOMATIC CONTROLLERS SHALL BE OF THE SIZE AND TYPE NOTED, AND INSTALLED WHERE INDICATED ON IRRIGATION PLAN. CONTROL WIRES SHALL BE SLEEVED IN ELECTRICAL CONDUIT TO MAINLINE. 120-VOLT ELECTRICAL SERVICE TO CONTROLLERS SHALL BE PROVIDED BY THE LANDSCAPE CONTRACTOR. COORDINATE THIS WORK WITH ELECTRICAL AND OTHER CONTRACTORS FOR THIS PROJECT.

14. A MASTER VALVE SHALL BE INSTALLED ALONG WITH APPROPRIATE FLOW SENSING EQUIPMENT TO ELIMINATE EXCESS SYSTEM FLOW SHOULD A VALVE STICK OPEN AFTER A CYCLE HAS BEEN COMPLETED OR A MAIN LINE BREAK OCCURS.

15. PRIOR TO BACKFILLING IRRIGATION TRENCHES:
A. ALL MAIN LINES IN THE SYSTEM SHALL BE CAPPED AND PRESSURE TESTED AT 125 P.S.I. FOR A PERIOD OF FOUR (4) HOURS. ANY LEAKS FOUND SHALL BE CORRECTED BY REMOVING THE LEAKING PIPE OR FITTINGS AND INSTALLING NEW MATERIAL IN ITS PLACE. REPEAT PRESSURE TEST TO ASSURE ABSENCE OF LEAKS.
B. ALL LATERAL LINES SHALL BE PRESSURE TESTED AT DESIGN PRESSURE FOR ONE (1) HOUR. DESIGN PRESSURE FOR THIS PROJECT IS 60 PSI.
C. THE CONTRACTOR SHALL NOT ALLOW NOR CAUSE ANY OF HIS WORK TO BE COVERED UNTIL IT HAS BEEN INSPECTED, TESTED AND APPROVED BY THE OWNER/OWNER'S AUTHORIZED REPRESENTATIVE.
D. WHERE MAIN LINE WILL BE ALLOWED TO SIT UNCOVERED FOR ANY LENGTH OF TIME IN THE TRENCH PRIOR TO TESTING, SHADE MAIN LINE WITH A THIN COVERING OF SOIL TO MINIMIZE WEATHER-RELATED EXPANSION OR CONTRACTION OF PIPE.

16. IRRIGATION CONTRACTOR SHALL ADJUST ALL HEADS TO PROVIDE A UNIFORM COVERAGE AND TO KEEP SPRAY OFF BUILDINGS, WALLS, PARKING AREAS, AND DRIVES.

17. WHEN THE SPRINKLER SYSTEM IS COMPLETED THE CONTRACTOR SHALL, IN THE PRESENCE OF THE OWNER/OWNER'S AUTHORIZED REPRESENTATIVE, PERFORM A COVERAGE TEST OF WATER PROVIDED TO THE PLANTING AREAS TO ENSURE IT IS CONSISTENT AND UNIFORM. THE CONTRACTOR SHALL FURNISH ALL MATERIALS AND PERFORM ALL WORK REQUIRED TO CORRECT ANY INADEQUACIES OF COVERAGE AT HIS OWN COST.

18. THE CONTRACTOR SHALL FURNISH TO THE OWNER A COMPLETE "AS BUILT" DRAWING ON MYLAR AND TWO PRINTS SHOWING EXACT LOCATIONS OF ALL ITEMS INSTALLED. THESE ARE TO BE DELIVERED ON OR BEFORE FINAL INSPECTION.

19. A REDUCED IRRIGATION PLAN INDICATING ALL SYSTEMS AND THEIR APPROPRIATE SEQUENCED VALVES SHALL BE LAMINATED IN MYLAR AND MOUNTED ON THE INSIDE COVER OF THE IRRIGATION CONTROLLER(S).

20. IRRIGATION CONTRACTOR SHALL MAINTAIN THE SYSTEM FOR THE DURATION OF THE CONTRACT PERIOD.

21. IRRIGATION CONTRACTOR SHALL GUARANTEE THE ENTIRE IRRIGATION SYSTEM TO BE FREE OF DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE (1) YEAR FROM FINAL ACCEPTANCE BY THE OWNER.

IRRIGATION MAINTENANCE NOTES

IT IS THE OWNER'S RESPONSIBILITY TO SUPPLY THESE PLANS WITH THE FOLLOWING NOTES AND SPECIFICATIONS, ALONG WITH CONTRACTOR DRAWN "AS BUILT" PLANS TO ANY AND ALL FUTURE OWNERS AND MAINTENANCE COMPANIES.

1. THE PURPOSE OF THIS SPRINKLER SYSTEM IS TO PROVIDE ONLY SUFFICIENT WATER TO MAINTAIN PLANT LIFE DURING DRY WEATHER CONDITIONS OR SUMMER SEASONS. TIME CLOCKS SHALL BE READJUSTED CONTINUOUSLY THROUGHOUT THE SEASON, ON A WEEKLY BASIS IF NECESSARY, TO PROVIDE WATER ONLY WHEN THE SOIL IS DRY AT A DEPTH OF FOUR (4) INCHES THE FIRST INITIAL GROWING SEASON AND SIX (6) INCHES THE FOLLOWING YEARS. IF THE GROUND IS MOIST EITHER AT THE SURFACE OR A DEPTH OF FOUR (4) INCHES DURING THE FIRST YEAR AFTER INITIAL PLANT ESTABLISHMENT, OR IS MOIST AT A DEPTH OF SIX (6) INCHES THEREAFTER, SHUT THE TIME CLOCKS OFF AND DO NOT APPLY ADDITIONAL WATER UNTIL SOIL HAS BEEN ALLOWED TO DRY. READJUST TIME CLOCK PRIOR TO TURNING VALVES BACK ON. IF RAIN IS FORECAST OR IS EMINENT, ALL IRRIGATION SYSTEMS SHALL BE SHUT OFF AND NOT REACTIVATED UNTIL THE SOIL HAS DRIED TO THE ABOVE DEPTHS.

2. IF ANY SUBSURFACE DRAINAGE OR RUN-OFF IS VISIBLE AT LOW AREAS, ACROSS SIDEWALKS OR AT LOWER PORTIONS OF SLOPES, IMMEDIATELY SHUT THE VALVES OFF TO ALLOW THE AREA TO COMPLETELY DRY OUT. IF THIS CONDITION CONTINUES AFTER SUBSEQUENT WATERINGS, A QUALIFIED GEOLOGIST OR GEOTECHNICAL ENGINEER MUST BE RETAINED TO PROVIDE RECOMMENDATIONS TO ELIMINATE SUBSURFACE WATER OR DRAINAGE PROBLEMS. IF DURING NORMAL IRRIGATION, PONDING TAKES PLACE ON ANY LANDSCAPE AREA, DRIVES, PARKING AREAS OR ANY OTHER AREA, THE IRRIGATION SYSTEM SHALL BE IMMEDIATELY SHUT OFF AND A LICENSED CIVIL ENGINEER SHALL BE IMMEDIATELY CONTACTED TO PROVIDE RECOMMENDATIONS FOR POSITIVE AND PROPER DRAINAGE.

3. INSPECTIONS OF IRRIGATION SYSTEM SHALL BE MADE ON A DAILY BASIS TO OBSERVE AND PROVIDE REPAIRS OR REMEDIES TO THE FOLLOWING UNACCEPTABLE PROBLEMS:
A. OVER-SPRAY ON SIDEWALKS, STREETS, PAVED AREAS, PARKING AREAS, FENCES, WALLS, BUILDINGS OR STRUCTURES.
B. DRAINAGE OR RUN-OFF ACROSS SIDEWALKS, PAVING OR STREETS.
C. DAMAGED OR IMPROPERLY OPERATING HEADS, PIPING, VALVES, CONTROLLERS OR OTHER IRRIGATION EQUIPMENT.
D. IMPROPERLY ADJUSTED OR OPERATING MOISTURE SENSORS.

4. ONLY LICENSED AND QUALIFIED LANDSCAPE CONTRACTORS AND LANDSCAPE MAINTENANCE INDIVIDUALS SHALL PROVIDE OR MAKE REPAIRS TO IRRIGATION SYSTEM.

5. AT ALL TIMES, THE LANDSCAPE CONTRACTOR OR MAINTENANCE CONTRACTOR SHALL ASSIGN A QUALIFIED INDIVIDUAL OR INDIVIDUALS TO INSPECT AND MONITOR THE IRRIGATION SYSTEM. OWNERS SHALL BE SUPPLIED WITH 24 HOUR EMERGENCY PHONE NUMBERS FOR USE IN REPORTING BROKEN OR DAMAGED IRRIGATION EQUIPMENT.

6. ALL IRRIGATION EQUIPMENT REQUIRES CONTINUOUS MAINTENANCE, CLEANING, ADJUSTMENT, PARTS REPLACEMENT AND INSPECTION. IT IS THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR OR LANDSCAPE MAINTENANCE COMPANY TO PROVIDE THESE SERVICES ON A CONTINUAL AND REGULAR BASIS AND SCHEDULE.

7. WATER SHALL BE APPLIED TO PLANTING AREAS IN SHORT INTERVALS OR MOISTURE SENSORS SHALL BE ADJUSTED TO PROHIBIT ANY SURFACE PONDING OR RUN-OFF, AND AT NO TIME SHALL WATER BE APPLIED TO CAUSE SOIL SATURATION.

8. OVERWATERING CAN RESULT IN DEATH OF PLANTS, POSSIBLE SOIL EXPANSION AND DAMAGE TO CONCRETE AND ASPHALT PAVING, DAMAGE TO FOUNDATIONS AND POSSIBLE LOSS OF SOIL COMPACTION. A QUALIFIED GEOTECHNICAL ENGINEER SHALL BE RETAINED TO PROVIDE SITE INSPECTIONS AT LEAST ON AN ANNUAL BASIS TO INSPECT FOR EXCESS SOIL MOISTURE.

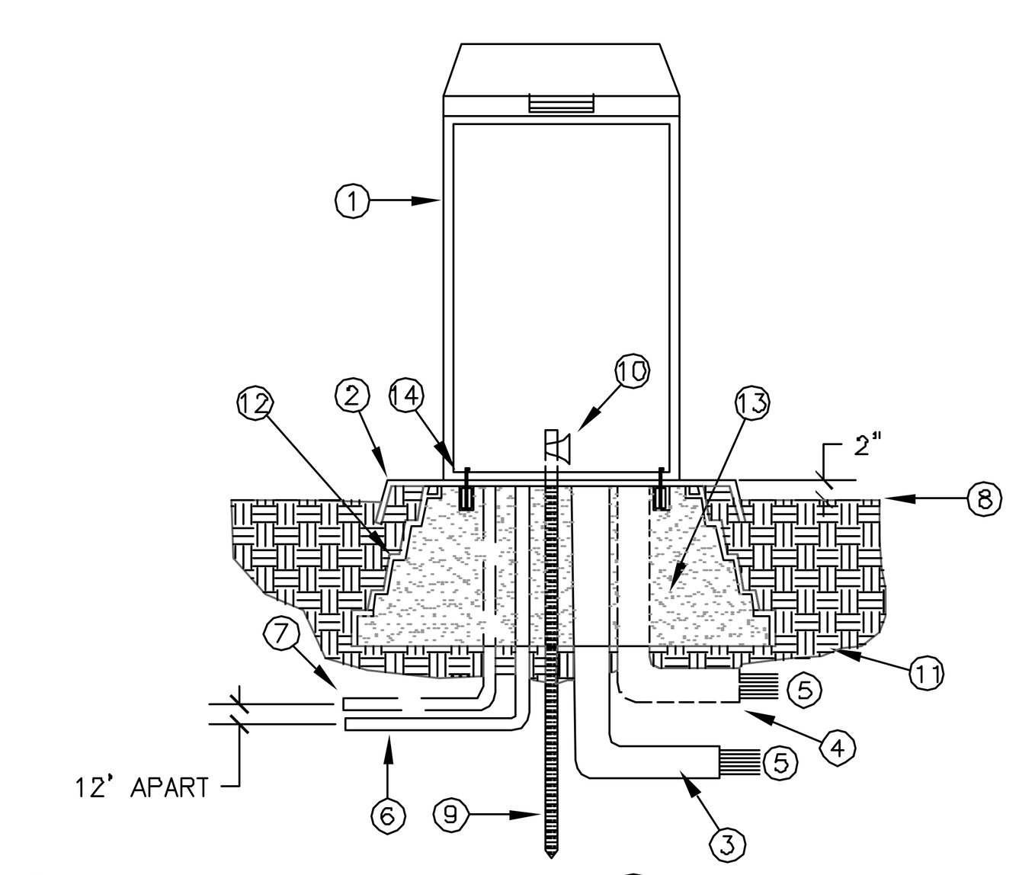
ENSURING THAT THE ABOVE PRECAUTIONS, REPAIRS AND CONTINUING MAINTENANCE ARE PROPERLY PERFORMED IS THE RESPONSIBILITY OF THE OWNER. THE LANDSCAPE ARCHITECT HAS BEEN RETAINED TO PREPARE THESE PLANS ONLY, AND DOES NOT PROVIDE POST CONSTRUCTION REVIEWS NOR REVIEWS OF ON-SITE MAINTENANCE. THE LANDSCAPE ARCHITECT DOES NOT ASSUME RESPONSIBILITY NOR LIABILITY OF MAINTENANCE OR REVIEW OF MAINTENANCE WORK OR REPAIRS OR DAMAGES RESULTING FROM LACK OF REPAIRS, MAINTENANCE, ADJUSTMENTS OR IMPROPER INSTALLATION OF IRRIGATION.

IRRIGATION EQUIPMENT SCHEDULE

SYM.	MANUF.	MODEL NUMBER	DESCRIPTION	PSI	GPM	RADIUS
	HUNTER	INST-04-CV-7A	POP-UP SPRAY SPRINKLER & NOZZLE	30	VARIES	7'
	"	INST-04-CV-7Q	" " " "	30	0.49	7'
	"	INST-04-CV-7H	" " " "	30	0.97	7'
	HUNTER	INST-04-CV-10A	POP-UP SPRAY SPRINKLER & NOZZLE	30	VARIES	10'
	"	INST-04-CV-10Q	" " " "	30	0.49	10'
	"	INST-04-CV-10H	" " " "	30	0.97	10'
	"	INST-04-CV-10F	" " " "	30	1.95	10'
	HUNTER	INST-04-CV-12A	POP-UP SPRAY SPRINKLER & NOZZLE	30	VARIES	12'
	"	INST-04-CV-12Q	" " " "	30	0.71	12'
	"	INST-04-CV-12H	" " " "	30	1.42	12'
	"	INST-04-CV-12F	" " " "	30	2.85	12'
	HUNTER	INST-04-CV-15A	POP-UP SPRAY SPRINKLER & NOZZLE	30	VARIES	15'
	"	INST-04-CV-15Q	" " " "	30	0.93	15'
	"	INST-04-CV-15H	" " " "	30	1.86	15'
	"	INST-04-CV-15F	" " " "	30	3.71	15'
	HUNTER	INST-04-CV-17A	POP-UP SPRAY SPRINKLER & NOZZLE	30	VARIES	17'
	"	INST-04-CV-17Q	" " " "	30	1.20	17'
	"	INST-04-CV-17H	" " " "	30	2.41	17'
	HUNTER	I-20-ADS-1.0(Q)	POP-UP ROTOR SPRINKLER & NOZZLE	50	1.2	21-31'
	"	I-20-ADS-2.0(H)	" " " "	50	2.0	26-36'
	"	I-20-36S-2.0(Q)	" " " "	50	2.0	26-36'
	"	I-20-ADS-3.0(Q)	" " " "	50	2.7	29-38'
	"	I-20-ADS-6.0(H)	" " " "	50	5.5	32-43'
	"	I-20-36S-6.0(F)	" " " "	50	5.5	32-43'
	"	I-20-36S-8.0(F)	" " " "	50	7.6	33-45'
	RAINBIRD	EFB-CP-PRS-D	ELECTRIC BRASS REMOTE CONTROL VALVE ASSEMBLY WITH PRESSURE REGULATION (see plans for sizes)			
	RAINBIRD	EFB-CP	ELECTRIC BRASS REMOTE CONTROL VALVE ASSEMBLY (see plans for sizes)			
	RAINBIRD	EFB-CP-PRS-D	ELECTRIC BRASS REMOTE CONTROL VALVE ASSEMBLY WITH PRESSURE REGULATION REPLACE EXISTING VALVE WITH NEW VALVE OF SAME SIZE			
	RAINBIRD	44LRC	QUICK COUPLING VALVE ASSEMBLY (including key and swivel hose ell)			
	FORD	B11-333	MANUAL DRAIN VALVE ASSEMBLY			
	NIBCO		RESILIENT SEAT GATE VALVE, NON-RISING STEM (line size)			
	RAPHAEL		4" PRESSURE REGULATING MASTER CONTROL VALVE ASSEMBLY, NORMALLY OPEN			
F	AMIAD	2-0420-1110-4030	4" SUPER STEEL INLINE FILTER ASSEMBLY WITH A BRUSHAWAY CLEANING SYSTEM AND WEAVEWIRE SCREEN (50 mesh – 300 micron) IN STEEL ENCLOSURE. (see detail on plans)			
S	RAINMASTER	FS-150	1 1/2" FLOW SENSOR			
E	RAINMASTER	DX48-UPED-T	48 STATION EVOLUTION CONTROLLER WITH PEDESTAL ENCLOSURE, PLUS THE FOLLOWING:			
		EV-GROUND-ROD	5/8"x8' COPPER CLAD GROUNDING ROD WITH CLAMP			
		DX-FLOW	FLOW SENSING CIRCUIT BOARD			
		DX-HW	HARDWIRE COMMUNICATION BOARD			
		EV-ANT-FD-KIT	LOW GAIN ANTENNA FOR PEDESTAL MOUNT			
		PMR-RAINMASTER-KIT	REMOTE CONTROL RECEIVER UNIT			
—COM—	RAINMASTER	EV-CAB-COM	DIRECT BURIAL COMMUNICATION CABLE (length as required)			
—SEN—	RAINMASTER	EV-CAB-SEN	DIRECT BURIAL CABLE CONNECTING FLOW SENSOR TO CONTROLLER (length as required)			
– – – – – –		CL. 200 O-RING	4" PVC PIPE (MAIN LINE) W/ DUCTILE IRON FITTINGS: ADD MJ AT ALL DIRECTION CHANGES.			
———		SCH. 40	PVC PIPE (LATERALS) *			
//////		SCH. 40 OR CL. 200	PVC PIPE (SLEEVES) * **			

SPRAY HEADS IN LAWN AREAS TO BE 4" POP-UPS. ALL OTHERS TO BE 12" POP-UPS

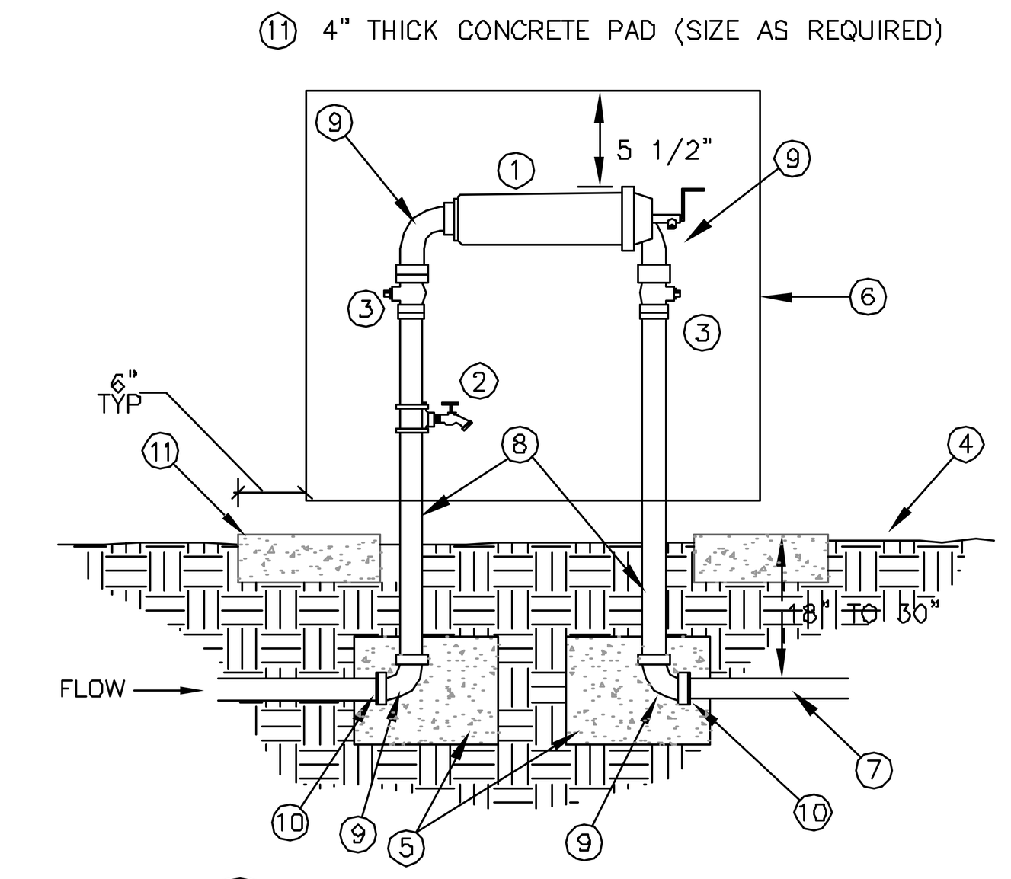
** ALL SLEEVES TO BE TWICE THE SIZE OF PIPE BEING SLEEVED.
ALL MAIN LINE SLEEVES TO BE PARALLELED BY A 2" SLEEVE FOR CONTROL WIRES.
* ALL P.V.C. PIPE 4" AND LESS TO BE SCH. 40. ALL P.V.C. PIPE LARGER THAN 4" TO BE CL. 200.



(1) CONTROLLER AND CONTROLLER ENCLOSURE – SEE IRRIGATION EQUIPMENT SCHEDULE
(2) QUICKPAD 3/16" MIN. THCKNESS ALUMINUM POWDER COATED PERFORMED PAD
(3) PVC SWEEP ELL STATIONS 1-24
(4) PVC SWEEP ELL STATIONS 25-40 (IF APPLICABLE)
(5) DIRECT BURIAL CONTROL WIRES TO CONTROL VALVES
(6) 110-VOLT SERVICE IN CONDUIT
(7) EV-CAB-COM CABLE 1" CONDUIT
(8) FINISH GRADE
(9) 5/8" X 8' COPPER GROUND ROD
(10) BRONZE GROUND CLAMP
(11) SUBGRADE COMPACTED TO 90%
(12) PREFORMED PAD SUPPORT BASE
(13) FILL INSIDE BASE WITH PEA GRAVEL
(14) QUICKPAD FASTENING BRACKET (2)

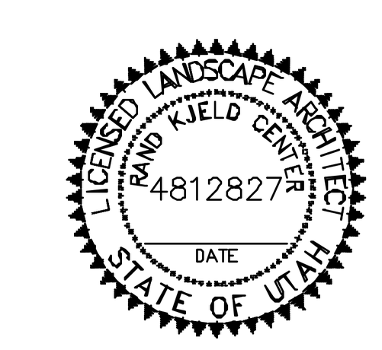
F CONTROLLER & ENCLOSURE
NTS

(1) STEEL INLINE FILTER WITH WEAVEWIRE SCREEN (300 MICRON) SEE PLAN FOR SIZE
(2) 3/4" BRASS HOSE BIB AND SADDLE
(3) FL WAFER BUTTERFLY VALVE-SAME AS LINE SIZE
(4) FINISH GRADE
(5) CONCRETE THRUST BLOCKS (TYP.). WRAP PIPES W/ 10 MIL TAPE. CAST AGAINST UNDISTURBED SOIL
(6) BACKFLOW ENCLOSURE – SEE IRRIGATION EQUIPMENT SCHEDULE (FILTER) (INSTALL PER MANUFACTURER'S SPECIFICATIONS)
(7) FL CAST PIPE-SAME AS LINE SIZE
(8) FL X PE, SPOOL LENGTH AS REQUIRED (TYP.)
(9) FL ELL (TYP.)-SAME AS LINE SIZE
(10) INSTA-FLANGE ADAPTER-SAME AS LINE SIZE
(11) 4" THICK CONCRETE PAD (SIZE AS REQUIRED)



G FILTER ASSEMBLY
NTS

NOTES:



Rev.	By	Date	Remarks
0	GHG	4/15/05	ISSUED FOR BID
1	GHG	4/4/05	ISSUED FOR REVIEW

WEBER STATE UNIVERSITY

LANDSCAPE IMPROVEMENTS
PHASE 4
ADMINISTRATION BUILDING
IRRIGATION NOTES AND SCHEDULE

BINGHAM ENGINEERING
SALT LAKE CITY - (801) 532-2520
OGDEN - (801) 399-1662

Dsn: RKC
Drw: RKC
Chk: GHG
Rvw: RW

Sht L-4 of 9

Print Date: 05/17/2005 | Created: 3/17/05 | Proj. # 4357

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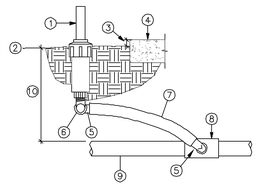
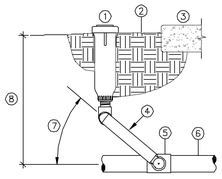


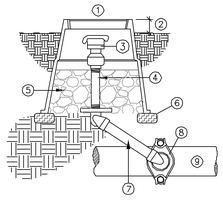
1. POP-UP SPRAY HEAD – SEE LEGEND
2. FINISH GRADE
3. 1" – 1 1/2"
4. NOTE: ALL SPRAY HEADS TO BE PLACED 2" CLEAR OF ALL HARDSCAPE SURFACES
5. SWING PIPE ELL WITH SPIRAL BARB FITTING (TYP.)
6. MARLEX STREET ELL
7. FLEXIBLE SWING PIPE, 12" MIN. LENGTH
8. PVC SCH 40 SxSxT TEE (OR ELL)
9. PVC LATERAL LINE, SIZE AS NOTED ON PLAN
10. DEPTH – SEE NOTES & TRENCH DETAIL

A 4" POP-UP SPRAY SPRINKLER
NTS



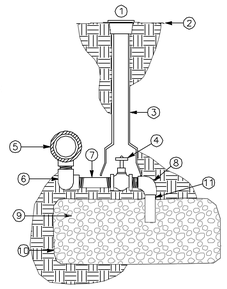
1. POP-UP ROTOR SPRINKLER – SEE LEGEND
2. FINISH GRADE
3. NOTE: ALL SPRAY HEADS TO BE PLACED 2" CLEAR OF ALL HARDSCAPE SURFACES
4. LASCO UNITIZED SWING JOINT OR SPEARS SWING JOINT RISER ASSEMBLY; 8" LENGTH; SIZE AS REQUIRED
5. PVC SCH 40 SxSxT TEE (OR ELL)
6. PVC LATERAL LINE, SIZE AS NOTED ON PLAN
7. SWING JOINT ARM INSTALLED AT ANGLE BETWEEN 30 AND 45 DRG. OF LATERAL PIPE
8. DEPTH – SEE NOTES & TRENCH DETAIL

B POP-UP GEAR DRIVE ROTOR SPRINKLER
NTS



1. 10" ROUND GREEN PLASTIC VALVE BOX, CARSON-BROOKS 910 OR EQUAL
2. HEIGHT ABOVE FINISH GRADE: 1 1/2" IN TURF AREAS (SODDED); 1" IN TURF AREAS (SEEDED); 2" IN PLANTING AREAS
3. QUICK COUPLER VALVE – SEE EQUIPMENT SCHEDULE
4. BRASS NIPPLE, LENGTH AS REQUIRED
5. 6" MIN. DEPTH CLEAN PEA GRAVEL
6. REDWOOD OR BRICK BLOCKING, TYPICAL
7. 12" LASCO UNITIZED SWING JOINT W/ BRASS INSERT STABILIZER ELBOW, OR 12" SPEARS SWING JOINT RISER ASSEMBLY W/ BRASS FEMALE THREAD 90° ELL OUTLET
8. DUCTILE IRON SERVICE SADDLE W/ S.S. STRAP (SIDE MOUNTED, SIZE AS REQUIRED)
9. PVC MAIN LINE

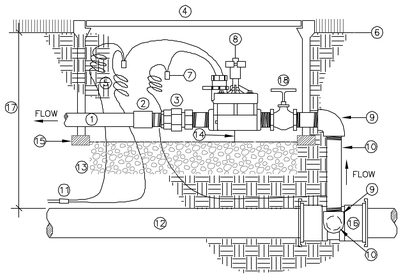
C QUICK COUPLING VALVE
NTS



1. ADJUSTABLE CURB BOX W/ BOLT LID, CARSON-BROOKS 250 OR EQUAL
2. FINISH GRADE
3. ADJUST HEIGHT AS REQUIRED
4. 3/4" BRASS GLOBE VALVE W/ CROSS HANDLE – SEE IRRIGATION EQUIPMENT SCHEDULE
5. PVC MAINLINE & D. I. SERVICE TEE
6. (2)–FIPTxFIPT 90° ELL (2)–3/4" x CLOSE PVC NIPPLE
7. 3/4"x6" PVC NIPPLE
8. 3/4" 90° STREET ELL
9. 3/4" ROCK SUMP – 6 C.F. MIN. SIZE
10. FILTER FABRIC COVERING ROCK SUMP
11. 3/4" x 6" PVC NIPPLE

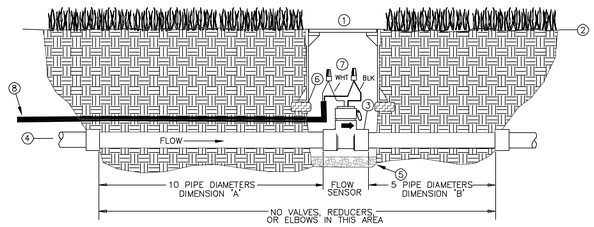
NOTE:
1) ALL PVC NIPPLES TO BE SCHEDULE 80.
2) PROVIDE VALVE KEY TO OWNER

D MANUAL DRAIN VALVE
NTS



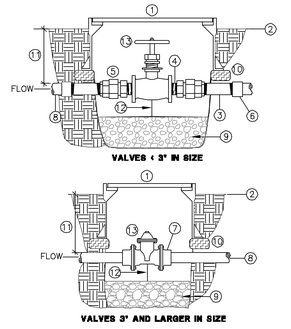
1. LATERAL LINE
2. PVC SCH. 80 FEMALE ADAPTER
3. PVC SCH. 80 UNION
4. GREEN PLASTIC VALVE BOX W/ BOLT LOCK (CARSON-BROOKS OR APPROVED EQUAL), SIZE AS REQUIRED
5. PROVIDE 12" EXPANSION LOOP AT EACH WIRE CONNECTOR IN BOX
6. FINISH GRADE
7. WATER TIGHT WIRE CONNECTORS (TYP.)
8. ELECTRIC CONTROL VALVE – SEE IRRIGATION EQUIPMENT SCHEDULE
9. SCH. 80 PVC ELL
10. SCH. 80 PVC TOE NIPPLE, LENGTH AS REQ'D
11. WIRES TO CONTROLLER, TAPE AND BUNDLE EVERY 10' – SEE TRENCH DETAIL
12. PVC MAIN LINE
13. 4" MIN. DEPTH PEA GRAVEL
14. 2" MIN. CLEARANCE REQUIRED
15. 2"x4" REDWOOD OR BRICK BLOCKING (TYP.)
16. DUCTILE IRON SERVICE TEE, SIZE AS REQ'D
17. DEPTH – SEE NOTES
18. GATE VALVE (LINE SIZE)

E CONTROL VALVE ASSEMBLY
NTS



1. 10" ROUND GREEN PLASTIC VALVE BOX, W/ BOLT LOCK, AMATEK OR EQUAL, MARKED "G.V." IN 2" WHITE LETTERS
2. FINISH GRADE
3. FLOW SENSOR
4. PVC MAINLINE
5. 4" MIN. DEPTH PEA GRAVEL
6. 2x4 REDWOOD OR BRICK BLOCKING
7. WATERPROOF WIRE SPLICES
8. SENSOR CABLE TO CONTROLLER

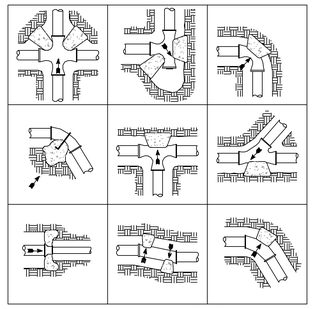
F FLOW SENSOR INSTALLATION
NTS



1. 10" ROUND PLASTIC VALVE BOX, W/ LOCK BOLT, CARSON-BROOKS 910 OR EQUAL, MARKED "G.V." WITH 2" WHITE LETTERS
2. FINISH GRADE
3. METAL NIPPLE, 12" MIN. LENGTH, PER BELOW: 1" – 1 1/4" DIA. = GALVANIZED STEEL NIPPLE 1 1/2" – 3" DIA. = DUCTILE IRON NIPPLE
4. 2" NIPPLE, DIA. AS REQUIRED
5. BRASS UNION (TYP.)
6. PVC SCH. 80 FEMALE ADAPTER (TYP.)
7. BELL x FLANGE METAL ADAPTER (TYP.)
8. PVC MAINLINE
9. 4" MIN. DEPTH CLEAN PEA GRAVEL
10. 2"x4" REDWOOD OR BRICK BLOCKING (TYP.)
11. DEPTH – SEE NOTES
12. 2" MINIMUM CLEARANCE REQUIRED
13. GATE VALVE (LINE SIZE) – SEE EQUIPMENT SCHEDULE

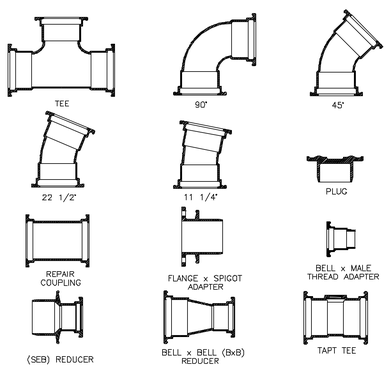
NOTES:
VALVES ≥ 2" ø SHALL HAVE 2" SQUARE OPERATING NUTS.
MEGA LUG FITTINGS MAY BE USED AS REQUIRED.

G ISOLATION GATE VALVE
NTS



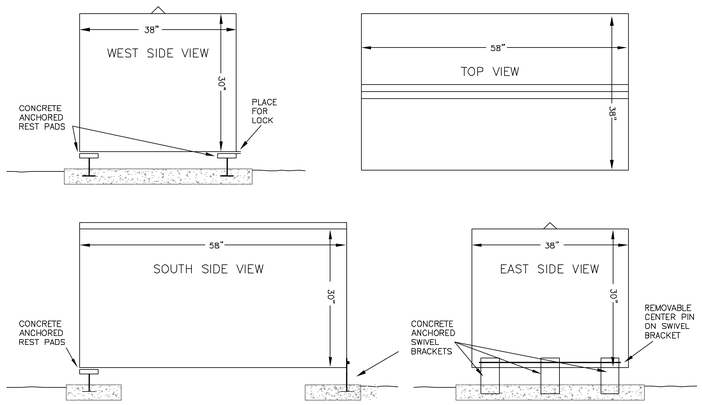
◄◄ DIRECTION OF THRUST (TYP.)
INSTALL THRUST BLOCKS ON ALL 3" FITTINGS AND VALVES

J THRUST BLOCK DETAILS
NTS



SUGGESTED SPECIFICATIONS:
ALL 4" AND LARGER FITTINGS, AND 3", 2 1/2", & 2" FULL SIZE TEES SHALL BE MANUFACTURED OF DUCTILE IRON, GRADE 65-45-12 IN ACCORDANCE WITH ASTM A-536. FITTINGS SHALL BAVE DEEP BELL PUSH-ON JOINTS WITH GASKETS MEETING ASTM F-477. FITTINGS SHALL BE "HARCO DEEP BELL" AS MANUFACTURED BY THE HARRINGTON CORPORATION OF LYNCHBURG, VA. TRANSITION GASKETS ARE NOT ALLOWED.

M DUCTILE IRON FITTINGS
NTS



H FILTER ENCLOSURE
NTS

THRUST BLOCKING INSTRUCTIONS

1. PROVIDE THRUST BLOCKS AT ALL CHANGES IN SIZE OR DIRECTION. BENDS, REDUCERS, PLUGS, AND THE OPPOSITE SIDE OF TEE BRANCHES ALL REQUIRE THRUST BLOCKS.
2. THE SIZES OF THE BLOCKS ARE DETERMINED BY THE WORKING PRESSURE, THE SIZE AND TYPE OF FITTING, AND SOIL CONDITIONS AT THE JOB SITE. TO CALCULATE THE AREA OF CONTACT WITH THE SOIL, FOLLOW THESE STEPS:
   CALCULATE THE THRUST BY SELECTING THRUST/100 BY SIZE AND TYPE OF FITTING FROM TABLE 1 AND MULTIPLYING THRUST/100 BY SYSTEM PRESSURE DIVIDED BY 100.
3. DIVIDE THE TOTAL THRUST BY BEARING CAPACITY OF THE SOIL IN EXCAVATION (FROM TABLE 2) TO DETERMINE THE AREA IN SQUARE FEET OF THRUST BLOCK REQUIRED TO BE IN CONTACT WITH THE UNDISTURBED SOIL.

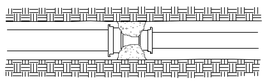


TABLE 1 – THRUST/100

Size	Plugs	Tees, 90° Bends	45° Bends	22.5° Bends
2	363	513	259	141
2 1/2	531	751	379	207
3	788	1,114	562	307
4	1,302	1,841	928	508
6	2,822	3,990	2,012	1,101
8	4,783	6,763	3,410	1,865
10	7,430	10,505	5,297	2,898
12	10,452	14,778	7,452	4,076

FOR REDUCERS, SUBTRACT SMALL OPENING PLUG THRUST FROM LARGE OPENING PLUG THRUST TO CALCULATE THRUST/100.

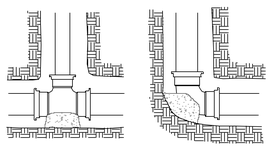
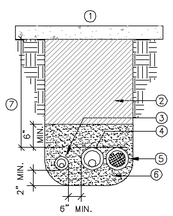


TABLE 2 – SAFE BEARING LOAD

SOIL TYPE	LBS PER SQ FT*
Soft Clay	1,000
Sand	2,000
Sand & Gravel	3,000
Sand & Gravel cemented w/Clay	4,000
Hard Pan	10,000

*HARCO ASSUMES NO RESPONSIBILITY FOR THE ABOVE BEARING LOAD DATA. THE ENGINEER IS RESPONSIBLE FOR DETERMINING SAFE BEARING LOADS, AND WHEN DOUBT EXISTS, SOIL BEARING TESTS SHOULD BE SPECIFIED. THE BEARING LOADS GIVEN ARE FOR HORIZONTAL THRUSTS WHEN DEPTH OF COVER EXCEEDS 2 FEET.

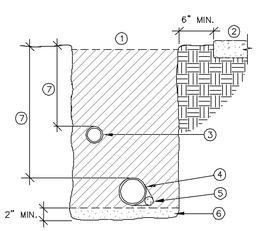
I THRUST BLOCKING INSTRUCTIONS
NTS



1. HARDSCAPE SURFACE – SEE CIVIL PLANS
2. BACKFILL MATERIAL – SEE NOTES
3. LATERAL LINE W/SLEEVE.
4. PRESSURE MAIN LINE SLEEVE
5. CONTROL WIRE SLEEVE (SAME SIZE AS MAIN LINE SLEEVE)
6. BEDDING MATERIAL – SEE NOTES
7. MINIMUM COVER:
   12" UNDER WALKS
   18" UNDER STREETS

NOTES:
- SLEEVES 4" AND SMALLER USE PVC SCH. 40 PIPE.
- SLEEVES >4" USE PVC CLASS 200 PIPE
- ALL SLEEVES SHALL BE TWO (2) TIMES LARGER THAN DIAMETER OF PIPE TO BE SLEEVED.
- INSTALL SLEEVES AT A DEPTH TO AVOID CONFLICT WITH OTHER UTILITIES AND MAINS.

K SLEEVING DETAIL
NTS



1. BACKFILL MATERIAL – SEE NOTES, COMPACT TO 90% MIN.
2. ADJACENT HARD SURFACE
3. NON-PRESSURE LATERAL LINE
4. PRESSURE MAIN LINE
5. DIRECT BURIAL, LOW VOLTAGE CONTROL WIRES; TAPE AND BUNDLE AT 10 FT. O.C.
6. BEDDING MATERIAL – SEE NOTES
7. PIPE DEPTHS – SEE NOTES

NOTE: SEE SLEEVING DETAIL FOR TRENCHING IN PAVED AREAS.

L TRENCH DETAIL
NTS

NOTES:

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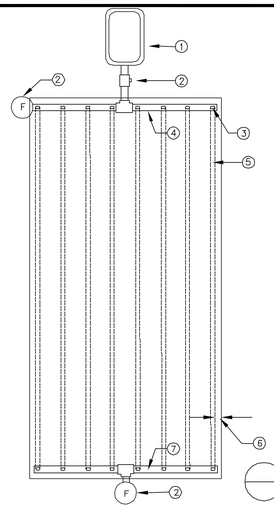
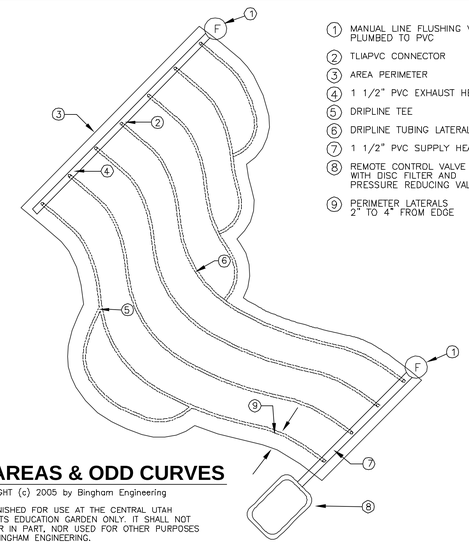


1. REMOTE CONTROL VALVE WITH DISC FILTER AND PRESSURE REDUCING VALVE
2. MANUAL FLUSH VALVE PLUMBED TO PVC
3. TLIAPVC CONNECTOR
4. 1 1/2" PVC SUPPLY HEADER
5. TECHLINE CV TUBING
6. PERIMETER DRIPLINE 2" TO 4" FROM EDGE
7. 1 1/2" PVC EXHAUST HEADER

END FEED DRIP LAYOUT

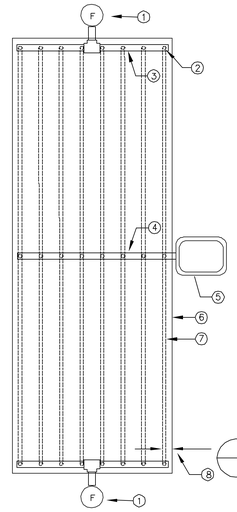
NTS



1. MANUAL LINE FLUSHING VALVE PLUMBED TO PVC
2. TLIAPVC CONNECTOR
3. AREA PERIMETER
4. 1 1/2" PVC EXHAUST HEADER
5. DRIPLINE TEE
6. DRIPLINE TUBING LATERAL
7. 1 1/2" PVC SUPPLY HEADER
8. REMOTE CONTROL VALVE WITH DISC FILTER AND PRESSURE REDUCING VALVE
9. PERIMETER LATERALS 2" TO 4" FROM EDGE

IRREGULAR AREAS & ODD CURVES

NTS



1. MANUAL FLUSH VALVE PLUMBED TO PVC
2. TLIAPVC CONNECTOR
3. 1 1/2" PVC EXHAUST HEADER
4. 1 1/2" PVC SUPPLY HEADER
5. REMOTE CONTROL VALVE WITH DISC FILTER AND PRESSURE REDUCING VALVE
6. AREA PERIMETER
7. TECHLINE CV TUBING LATERAL
8. PERIMETER LATERALS 2" TO 4" FROM EDGE

CENTER FEED DRIP LAYOUT

NTS

NOTES:

1. MANUAL FLUSHING VALVE PLUMBED TO PVC
2. TECHLINE CV TUBING – INSTALL AT GRADE UNDER MULCH
3. 1 1/2" PVC EXHAUST HEADER FOR DEPTH SEE NOTES
4. 1 1/2" PVC SUPPLY HEADER FOR DEPTH SEE NOTES
5. TLIAPVC CONNECTOR
6. REMOTE CONTROL VALVE
7. ON SLOPES, USE THE SPECIFIED DRIPLINE SPACING ON THE TOP 2/3 OF THE SLOPE
8. ON SLOPES, USE THE SPECIFIED DRIPLINE SPACING PLUS 25% ON THE BOTTOM 1/3 OF SLOPE

NOTE: ON SLOPES, ALIGN DRIPLINE PARALLEL TO THE CONTOURS OF THE SLOPE

DRIPLINE CIRCUIT LAYOUT

NTS

1. PLANTING BED MULCH, SEE PLANTING NOTES FOR DEPTH
2. FINISH GRADE
3. CARSON–BROOKS 1220 JUMBO SERIES VALVE BOX
4. 1" MAX DEPTH
5. PVC UNION
6. PVC SHC 40 COUPLING / BUSHING
7. BALL VALVE
8. WATERPROOF CONNECTORS
9. INLINE 1" DISC FILTER, ANGLED
10. REMOTE CONTROL VALVE
11. INLINE PRESSURE REGULATOR
12. 2"x4" REDWOOD OR BRICK BLOCKING
13. 4" MIN. DEPTH WASHED PEA GRAVEL
14. PVC SUPPLY HEADER

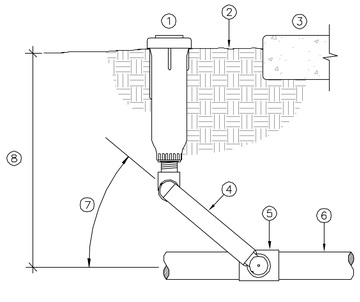
DRIP ZONE REMOTE CONTROL VALVE

NTS

1. REMOTE CONTROL VALVE WITH DISC FILTER AND PRESSURE REDUCING VALVE
2. TLIAPVC CONECTOR
3. 1 1/2" PVC SUPPLY HEADER
4. TECHLINE CV TUBING LATERAL
5. ISLAND PERIMETER
6. MANUAL FLUSH VALVE
7. 1 1/2" PVC EXHAUST HEADER
8. PERIMETER DRIPLINE 2" TO 4" FROM EDGE

ISLAND DRIP LAYOUT

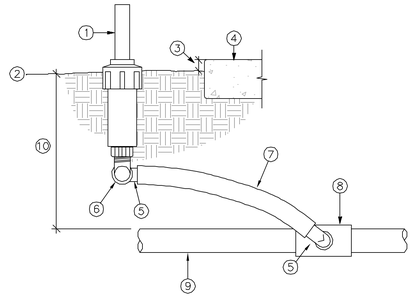
NTS



1. POP–UP ROTOR SPRINKLER – SEE LEGEND
2. FINISH GRADE
3. NOTE: ALL SPRAY HEADS TO BE PLACED 2" CLEAR OF ALL HARDSCAPE SURFACES
4. LASCO UNITIZED SWING JOINT OR SPEARS SWING JOINT RISER ASSEMBLY; 8" LENGTH; SIZE AS REQUIRED
5. PVC SCH 40 SxSxT TEE (OR ELL)
6. PVC LATERAL LINE, SIZE AS NOTED ON PLAN
7. SWING JOINT ARM INSTALLED AT ANGLE BETWEEN 30 AND 45 DRG. OF LATERAL PIPE
8. DEPTH – SEE NOTES & TRENCH DETAIL

POP-UP GEAR DRIVE ROTOR SPRINKLER

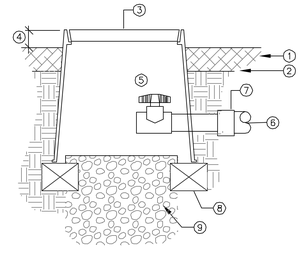
NTS



1. POP–UP SPRAY HEAD – SEE LEGEND
2. FINISH GRADE
3. 1" – 1 1/2"
4. NOTE: ALL SPRAY HEADS TO BE PLACED 2" CLEAR OF ALL HARDSCAPE SURFACES
5. SWING PIPE ELL WITH SPIRAL BARB FITTING (TYP.)
6. MARLEX STREET ELL
7. FLEXIBLE SWING PIPE, 12" MIN. LENGTH
8. PVC SCH 40 SxSxT TEE (OR ELL)
9. PVC LATERAL LINE, SIZE AS NOTED ON PLAN
10. DEPTH – SEE NOTES & TRENCH DETAIL

4" POP-UP SPRAY SPRINKLER

NTS



1. PLANTING BED MULCH SEE PLANTING NOTES FOR DEPTH
2. FINISH GRADE
3. PLASTIC VALVE BOX CARSON–BROOKS 809 OR EQUAL
4. 1" MAX. DEPTH
5. MANUAL FLUSHING VALVE
6. PVC EXHAUST HEADER
7. PVC REDUCER ADAPTER (S X 1/2") FPT (SIZE AS REQ'D)
8. (3) 2" X 4" REDWOOD OR BRICK BLOCKING
9. 1 C.F. WASHED PEA GRAVEL

DRIP FLUSH VALVE (PLUMBED TO PVC)

NTS

LICENSED LANDSCAPE ARCHITECT — 4812827 — DATE — STATE OF UTAH

Rev.	By	Date	Remarks
0	GHG	4/15/05	ISSUED FOR BID
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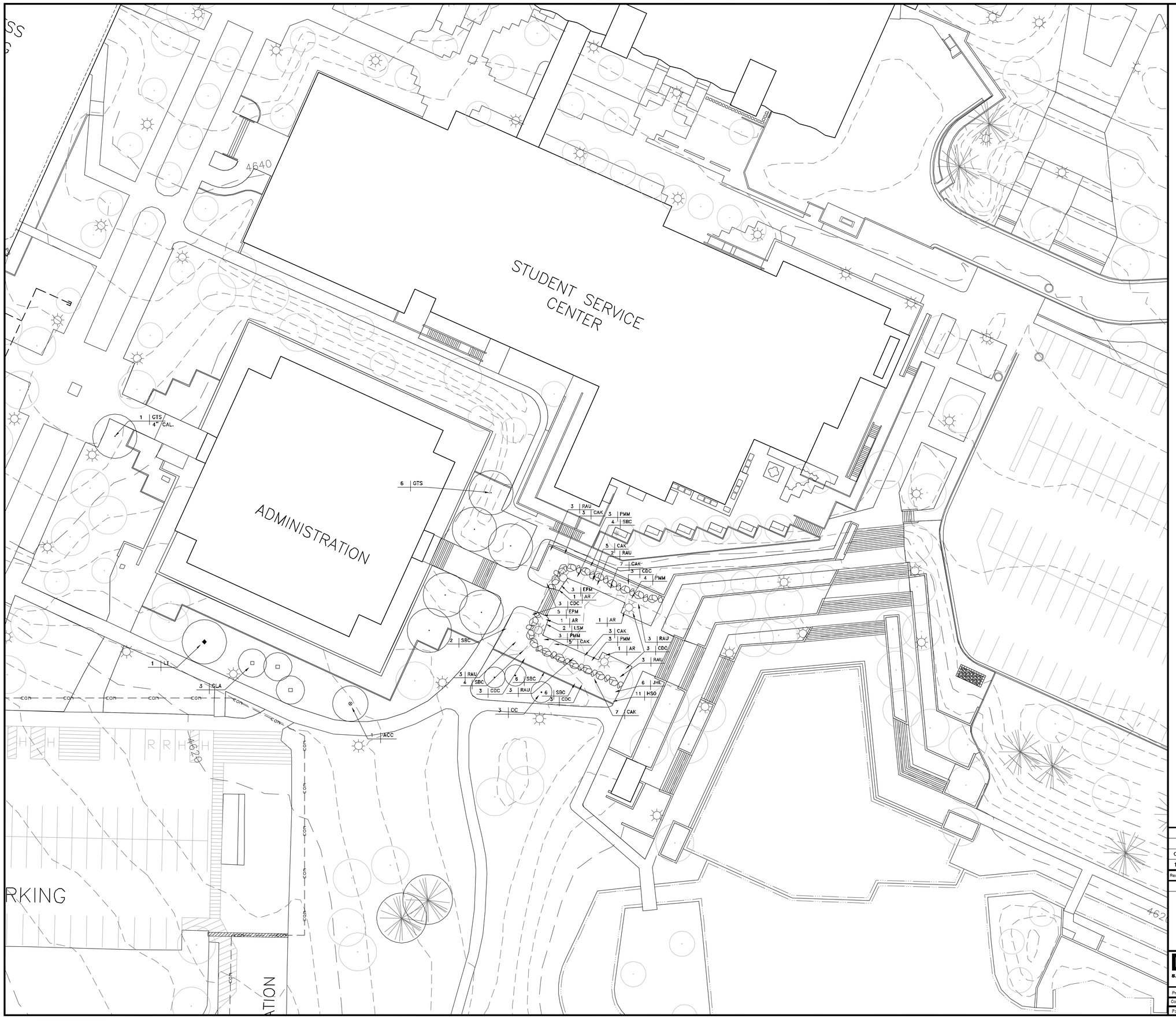

NOTES:

TREES

ACC	Abies concolor 'Candicans' / Candicans Fir
CC	Cercis canadensis / Carriere Hawthorn
CLA	Crataegus lavallei Carriere Hawthorn
GTS	Gleditsia triacanthos 'Shademaster' Shademaster Honeylocust
LT	Liriodendron tulipifera Tulip Tree

0 20 40 60
Scale in Feet

STATE OF UTAH
GREGORY H. GRAVES
104416
REGISTERED LANDSCAPE ARCHITECT

Rev.	By	Date	Remarks
0	GHG	4/15/05	ISSUED FOR BID
1	GHG	4/4/05	ISSUED FOR REVIEW

WEBER STATE UNVERSITY

LANDSCAPE IMPROVEMENTS
PHASE 4
ADMINISTRATION BUIDING
PLANTING PLAN - TREES

BINGHAM ENGINEERING
SALT LAKE CITY - (801) 532-2820
OGDEN - (801) 399-1662

Dsn: GHG
Drw: GHG
Chk: JRL
Rvw: RW

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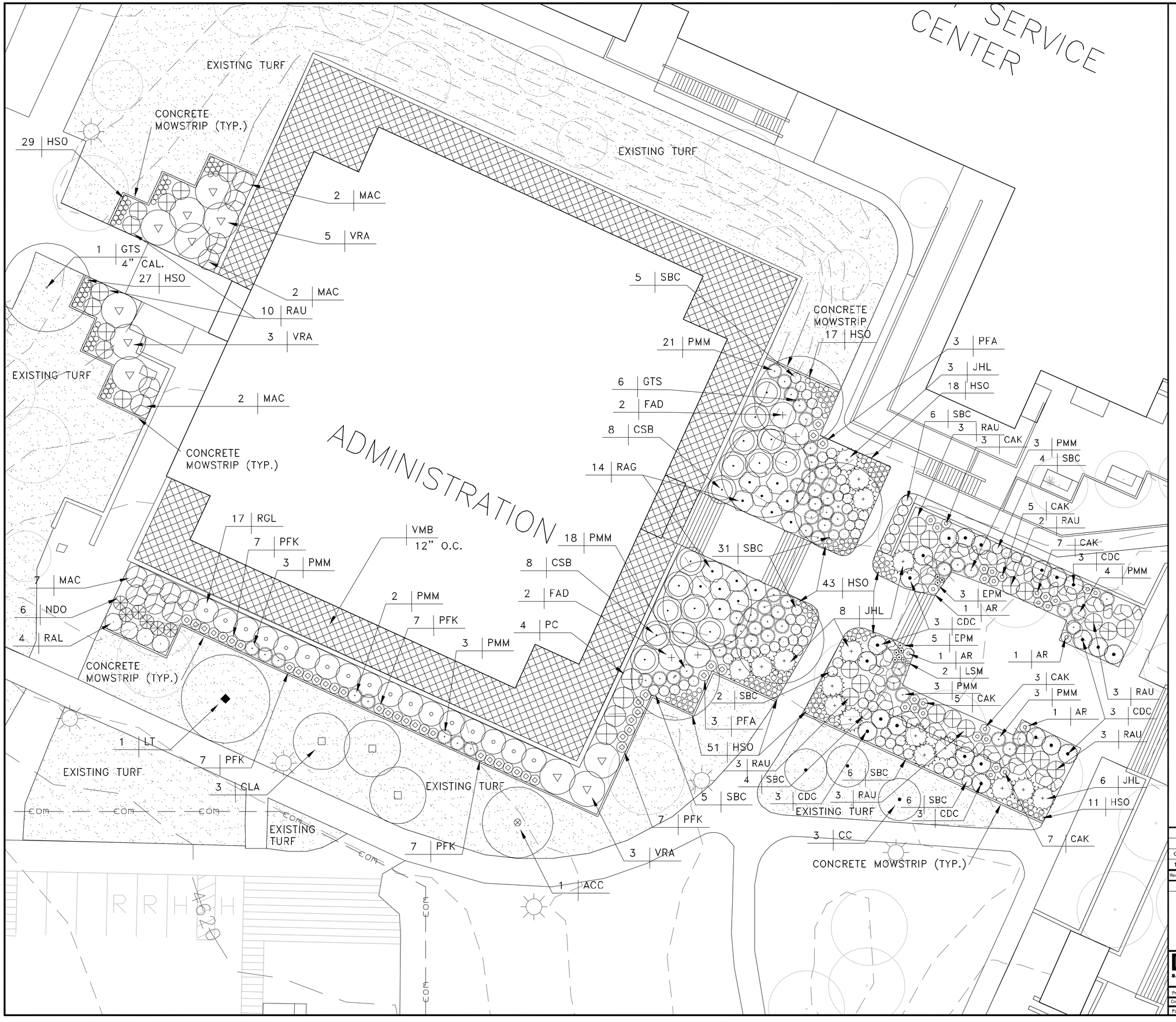

NOTES:

SHRUBS

CDC	Cotoneaster dammeri 'Coral Beauty'	Coral Beauty Cotoneaster
CSB	Cornus sericea 'Baileyi'	Red Osier Dogwood
FAD	Forsythia 'Arnold Dwarf'	Arnold Dwarf Forsythia
JHL	Juniperus horizontalis 'Limeglow'	Limeglow Juniper
MAC	Mahonia aquifolium	Oregon Grape
NDO	Nandina domestica	Heavenly Bamboo
PC	Prunus cistena	Purple Sand Cherry
PFA	Potentilla fruticosa 'Abbottswood'	Abbottswood Potentilla
PFK	Potentilla Fruticosa 'Kathryn Dyke'	Kathryn Dyke Potentilla
PMM	Pinus mugo mugus 'Pumilio'	Shrubby Swiss Mountain Pine
RAG	Rhus aromatica 'Grow Low'	Grow Low Sumac
RAL	Ribes alpinum	Alpine Currant
RAU	Ribes aureum	Golden Currant
RGL	Rhus glabra laciniata	Cutleaf Sumac
SBC	Spiraea x bumalda 'Crispa'	Crispa Spiraea
VRA	Viburnum x rhytidophylloides 'Alleghany'	Leatherleaf Viburnum

PERENNIALS & GRASSES

AR	Agastache rupestris	Hyssop
CAK	Calamagrostis x. acutiflora 'Karl Forester'	Feather Grass
EPM	Echinacea purpurea 'Magnes'	Purple Coneflower
HSO	Hemerocallis 'Stella de Oro'	Stella de Oro Daylily
LSM	Leucanthemum superbum maximum 'SunnySideUp'	Sunny Side Up Shasta Daisy
VMB	Vinca minor 'Bowles'	Bowles Periwinkle

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PLANTING NOTES

1. THE PLANTING PLAN IS DIAGRAMMATIC, AND ALL PLANT LOCATIONS ARE APPROXIMATE.
   A. PLANT SYMBOLS TAKE PRECEDENCE OVER PLANT QUANTITIES SPECIFIED ON PLANS.
   B. CONTRACTOR SHALL VERIFY PLANT QUANTITIES AND NOTIFY THE LANDSCAPE ARCHITECT OF ANY DISCREPANCIES BETWEEN QUANTITIES AND SYMBOLS SHOWN.

2. PRIOR TO PLANTING, THE IRRIGATION SYSTEM SHALL BE FULLY OPERATIONAL AND ALL PLANTING AREAS SHALL BE THOROUGHLY MOISTENED.

3. LANDSCAPE CONTRACTOR SHALL APPLY A CONTACT HERBICIDE TO ALL PLANTING AREAS WHERE WEEDS OR UNDESIRABLE VEGETATION ARE PRESENT PER MANUFACTURERS SPECIFICATIONS A MINIMUM OF TEN (10) DAYS PRIOR TO COMMENCEMENT OF ANY PLANTING OR IRRIGATION WORK. WEEDS SHALL BE ALLOWED TO COMPLETELY DIE BACK, INCLUDING THE ROOTS, BEFORE PROCEEDING WITH WORK. DEAD WEEDS SHALL BE REMOVED FROM THE SITE.

4. ALL NEW PLANTING BEDS SHALL RECEIVE A MINIMUM OF TWELVE (12) INCHES OF IMPORTED TOPSOIL. EXISTING PLANTING BEDS SHALL RECEIVE A TOP DRESSING OF APPROXIMATELY TWO TO THREE (2-3) INCHES OF TOPSOIL TO RESTORE THE BEDS TO PROPER LEVELS. TOPSOIL LEVEL SHALL BE FIVE (5) INCHES BELOW THE ADJACENT WALK OR WALL ELEVATION. THIS ALLOWS FOR A THREE (3) INCH LAYER OF SHREDDED BARK MULCH TO BE PLACED OVER THE TOPSOIL, AND ITS LEVEL TO BE TWO (2) INCHES BELOW THE ADJACENT HARD SURFACE.

5. ALL TOPSOIL USED ON THIS PROJECT SHALL MEET THE FOLLOWING CRITERIA:
   A. pH: 5.5 – 8.0
   B. EC (ELECTRICAL CONDUCTIVITY): <2.0 mmhos PER CENTIMETER
   C. SAR (SODIUM ABSORPTION RATIO): <3.0
   D. %OM (PERCENT ORGANIC MATTER): >1%
   E. TEXTURE (PARTICLE SIZE PER USDA SOIL CLASSIFICATION):
      SAND: <70%
      CLAY: <30%
      SILT: = BALANCE
   F. STONE FRAGMENTS (GRAVELS OR ANY SOIL PARTICLE GREATER THAN 2 MM IN SIZE): <5% (BY VOLUME)

IN ADDITION, THE SOIL SHALL BE FERTILE, FRIABLE, NATURAL LOAM AND SHALL BE CAPABLE OF SUSTAINING VIGOROUS PLANT GROWTH. IT SHALL BE FREE OF STONES, LUMPS, CLODS OF HARD EARTH, PLANTS OR THEIR ROOTS, STICKS AND OTHER EXTRANEOUS MATTER. THE SOIL SHALL CONTAIN NO NOXIOUS WEEDS NOR THEIR SEEDS. IT SHALL NOT BE USED FOR PLANTING OPERATIONS WHILE IN A FROZEN OR MUDDY CONDITION.

6. LANDSCAPE CONTRACTOR SHALL OBTAIN A SOIL ANALYSIS FROM ANY AUTHORIZED SOIL TESTING AGENCY OF ANY EXISTING STOCKPILED OR IMPORTED TOPSOIL TO BE USED ON THE PROJECT TO VERIFY ITS CONFORMANCE TO THE ABOVE SPECIFIED CRITERIA. TEST RESULTS SHALL INCLUDE HORTICULTURAL RECOMMENDATIONS. SOIL SAMPLES SHALL BE OBTAINED PER TESTING AGENCY DIRECTIONS. ALLOW TEN (10) WORKING DAYS TO OBTAIN RESULTS OF SOIL TESTS. COSTS FOR SUCH TESTING SHALL BE THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR.

7. PRIOR TO DELIVERY OF IMPORTED TOPSOIL TO THE SITE, THE LANDSCAPE CONTRACTOR SHALL PROVIDE TO THE OWNER (OR OWNER'S AUTHORIZED REPRESENTATIVE) THE NAME AND LOCATION OF THE TOPSOIL SOURCE, ALONG WITH THE CERTIFIED SOIL ANALYSIS OF THE TOPSOIL TO BE USED. THE ANALYSIS SHALL VERIFY THAT THE PROPOSED TOPSOIL MEETS THE ABOVE OUTLINED CRITERIA, AND IS CAPABLE OF SUPPORTING HEALTHY PLANT GROWTH.

8. THE FOLLOWING PROCEDURES SHALL BE FOLLOWED IN PLACING ALL TOPSOIL:
   A. ALL AREAS TO BE PLANTED WHICH HAVE A SLOPE OF LESS THAN 10% SHALL BE CROSS-RIPPED TO A DEPTH OF FOUR (4) TO SIX (6) INCHES.
   B. SUBGRADE MATERIAL SHALL BE ROUGH GRADED TO PLUS OR MINUS 0.1 FEET OF A FINAL ROUGH GRADE, WHICH WILL ALLOW THE CONTRACTOR TO ACHIEVE FINAL FINISHED GRADE THROUGH THE PLACEMENT OF IMPORTED TOPSOIL.
   C. SCARIFY SURFACE OF SUBGRADE TO A TWO (2) INCH DEPTH TO PROVIDE TRANSITION ZONE BETWEEN SUBGRADE AND TOPSOIL. PLACE TOPSOIL ON SUBGRADE AND FINE GRADE TO FINAL FINISHED GRADE AND TOPSOIL DEPTHS AS INDICATED ON THE DRAWINGS AND IN THESE NOTES.
   D. THE FOLLOWING SHALL BE APPLIED TO THE SURFACE AND RAKED INTO THE SOIL DURING FINE GRADING PROCEDURES: 16-16-16 SLOW RELEASE FERTILIZER CONTAINING TRACE ELEMENTS AT A RATE OF 1 POUND OF NITROGEN PER 1000 SF (6.25 POUNDS OF FERTILIZER).

9. LANDSCAPE CONTRACTOR SHALL MAINTAIN A MINIMUM 2% DRAINAGE AWAY FROM ALL BUILDINGS, STRUCTURES, AND WALLS. FINISHED GRADES SHALL BE SMOOTHED TO ELIMINATE PUDDLING OR STANDING WATER.

10. ALL FINISHED GRADES SHALL BE APPROVED BY THE OWNER/OWNER'S AUTHORIZED REPRESENTATIVE PRIOR TO INSTALLATION OF ANY PLANT MATERIALS.

11. CONTRACTOR SHALL HAVE THE LANDSCAPE ARCHITECT APPROVE PLANT MATERIAL SIZE AND QUALITY PRIOR TO INSTALLATION. ANY PLANTS WHICH ARE NOT TRUE TO FORM, APPEAR STRESSED OR UNHEALTHY, INFESTED WITH PESTS, OR UNDERSIZED FOR THEIR CONTAINERS SHALL BE REJECTED.

12. PLANT MATERIAL SHALL NOT BE ROOT BOUND. FIVE (5) GALLON PLANTS AND LARGER SHALL HAVE BEEN GROWN IN CONTAINERS FOR A MINIMUM OF SIX (6) MONTHS UP TO A MAXIMUM OF TWO (2) YEARS. PLANTS SHALL EXHIBIT HEALTHY GROWTH AND BE FREE OF DISEASES AND PESTS.

13. CONTRACTOR SHALL SPOT THE LOCATIONS OF ALL PLANTS FOR APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.

14. PLANTS SHALL NOT BE PLACED WITHIN TWELVE (12) INCHES OF SPRINKLER HEADS.

15. PLANT BACKFILL MIX SHALL BE 50% NATIVE SITE SOIL AND 50% IMPORTED TOPSOIL UNLESS OTHERWISE SPECIFIED.

16. TYPAR GEOTEXTILE FABRIC SHALL BE PLACED IN ALL SHRUB BEDS (EXCLUDING UNDER PERENNIAL PLANTS (YARROW, HYSSOP, NORTHERN SEA OAT GRASS, PURPLE CONEFLOWER, BLUE FESCUE, SHASTA DAISY, CREEPING JENNY, MAIDEN GRASS, AND PERIWINKLE). FABRIC SHALL BE PLACED DIRECTLY ON THE TOP OF THE TOPSOIL AND SECURELY ANCHORED PER MANUFACTURER'S RECOMMENDATIONS. ALL CORNERS AND SEAMS SHALL BE TUCKED INTO TOPSOIL AND SECURLY ANCHORED. IRRIGATION HEADES MAY PENETRATE THE FABRIC AS REQUIRED TO FUNCTION PROPERLY. COVER WITH A THREE (3) INCH LAYER OF SHREDDED BARK MULCH. HOLES IN THE FABRIC SHALL ONLY BE ALLOWED FOR PASSAGE OF IRRIGATION MATERIALS AND PLANTS. NO FABRIC SHALL BE VISIBLE IN ANY LOCATION.

17. PLANTING PROCEDURES FOR ALL PLANT MATERIALS, ESPECIALLY TREES, SHALL BE AS FOLLOWS:
   A. DIG PLANTING HOLE THREE (3) TIMES THE WIDTH OF THE ROOT BALL, AND ONE TO TWO (1-2) INCHES SHALLOWER THAN THE ROOT BALL DEPTH. SIDES OF HOLE SHOULD BE ROUGHENED AND NOT SMOOTH OR SCULPTED.
   B. FOR CONTAINER PLANTS, REMOVE CONTAINER AND PLACE ROOT BALL IN CENTER OF HOLE, WITH ROOT BALL RESTING ON UNDISTURBED SOIL. ROOT CROWN OR COLLAR SHALL BE AT OR JUST ABOVE FINISHED GRADE.
   C. FOR BALLED AND BURLAPPED PLANTS, PLACE ROOT BALL IN CENTER OF HOLE AND RESTING ON UNDISTURBED GROUND. CUT AND REMOVE WIRE BASKET AND BURLAP OR OTHER WRAPPING MATERIAL FROM ROOT BALL. THIS MAY BE DONE WITH ROOT BALL IN HOLE. BURLAP OR WIRE PIECES UNDERNEATH THE ROOT BALL MAY BE LEFT IF THEY CANNOT BE REMOVED. DO NOT FOLD BURLAP OVER, BUT CUT AWAY AS MUCH AS POSSIBLE WITHOUT DISTURBING ROOT BALL. BACKFILL BOTTOM THIRD (1/3) OF HOLE AS WIRE AND BURLAP ARE REMOVED.
   D. BACKFILL WITH SPECIFIED SOIL MIX, FILLING HOLE TO TWO THIRDS (2/3) CAPACITY.
   E. THOROUGHLY WATER PLANT, THEN COMPLETE BACKFILLING THE HOLE. FORM A WATERING BASIN AROUND THE PLANT AND THOROUGHLY WATER AGAIN.
   F. MONITOR ALL PLANTS TO INSURE THAT NO SETTLING OCCURS AND THAT PLANT REMAINS UPRIGHT AND VERTICAL.

18. AFTER PLANTING, THE FOLLOWING OPERATIONS SHALL BE PERFORMED:
   A. STAKE AND MULCH ALL TREES PER INSTALLATION DETAILS.
   B. REMOVE NURSERY STAKES AND TIES FROM ALL CONTAINER STOCK. MAINTAIN SIDE GROWTH ON ALL TREES. PRUNE AND REMOVE ANY DEAD, DAMAGED OR BROKEN BRANCHES.

19. ALL PLANTERS ARE TO RECEIVE A THREE (3) INCH TOP DRESSING OF SHREDDED WOOD FIBER MULCH. JUST PRIOR TO PLACEMENT OF MULCH, TREAT AREAS WITH PRE-EMERGENT HERBICIDE ACCORDING TO MANUFACTURERS RECOMMENDATIONS.

20. THE LANDSCAPE CONTRACTOR SHALL LEAVE SITE IN A CLEAN CONDITION, REMOVING ALL UNUSED MATERIAL, TRASH AND TOOLS.

21. AT SUBSTANTIAL COMPLETION OF ALL WORK OUTLINED IN THESE PLANS, THE LANDSCAPE CONTRACTOR SHALL CONTACT OWNER AND ARRANGE FOR A WALK THROUGH. SUBSTANTIAL COMPLETION SHALL BE DEFINED AS COMPLETION OF ALL WORK OUTLINED IN THE PLANS AND SPECIFICATINS WITH THE EXCEPTION OF FINAL CLEAN UP AND DEMOBILIZATION. WORK MUST BE FULLY COMPLETED ACCORDING TO ALL PLANS, NOTES, AND SPECIFICATIONS AND EXHIBIT PROFESSIONAL WORKMANSHIP. A MAINTENANCE PERIOD WILL BEGIN ON THE DATE OF ACCEPTANCE OF SUBSTANTIAL COMPLETION BY OWNER.

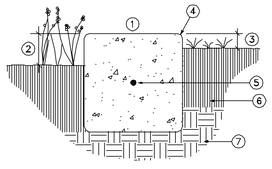
22. LANDSCAPE CONTRACTOR SHALL MAINTAIN ALL PLANTINGS UNTIL THEY BECOME ESTABLISHED. PLANTS SHALL BE CONSIDERED ESTABLISHED WHEN THEY EXHIBIT CONTINUED GROWTH AND VIGOR BEYOND THEIR INITIAL STATE AT PLANTING TIME.. THIS SHALL BE A MINIMUM PERIOD OF SIXTY (60) DAYS. THE MAINTENANCE WORK REQUIRED SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:
   A. DAILY WATERING OF ALL PLANT MATERIAL.
   B. WEEDING AND REMOVAL OF ALL WEEDS FROM GROUND COVER AND PLANTING BEDS.
   C. REPLACEMENT OF ANY DEAD, DYING, OR DAMAGED TREES, SHRUBS OR GROUNDCOVERS.
   D. FILLING AND REGRADING OF ANY LOW AREAS WHICH MAY CAUSE STANDING WATER.
   E. ADJUSTING OF SPRINKLER HEAD HEIGHTS AND WATERING PATTERNS.
   F. FILLING AND RECOMPACTION OF ERODED AREAS, ALONG WITH ANY REQUIRED RE-SEEDING AND/OR RE-PLANTING.
   G. WEEKLY REMOVAL OF ALL TRASH, LITTER, CLIPPINGS AND ALL FOREIGN DEBRIS.
   H. AT 30 DAYS AFTER PLANTING, A BALANCED FERTILIZER 16-16-16 SHALL BE APPLIED TO PLANTING AREAS AT A RATE OF ONE HALF (½) POUND OF NITROGEN PER 1000 SQUARE FEET.

23. PRIOR TO END OF MAINTENANCE PERIOD, LANDSCAPE CONTRACTOR SHALL CONTACT OWNER AND ARRANGE FOR A FINAL WALK THROUGH BEFORE FINAL ACCEPTANCE. OWNER MUST ACCEPT ALL MAINTAINED AREAS IN WRITING PRIOR TO END OF MAINTENANCE PERIOD.

24. LANDSCAPE CONTRACTOR SHALL GUARANTEE PLANT MATERIALS AS FOLLOWS:
   A. ALL SHRUBS AND GROUND COVERS SHALL BE GUARANTEED BY THE CONTRACTOR TO GROW AND MAINTAIN HEALTH FOR A PERIOD OF SIXTY (60) DAYS AFTER COMPLETION OF THE MAINTENANCE PERIOD AND FINAL ACCEPTANCE. ALL TREES SHALL BE GUARANTEED BY THE CONTRACTOR TO LIVE AND GROW IN AN ACCEPTABLE UPRIGHT POSITION FOR A PERIOD OF ONE (1) YEAR AFTER COMPLETION OF THE SPECIFIED MAINTENANCE PERIOD AND FINAL ACCEPTANCE.
   B. THE ONLY CONDITIONS WHICH RELIEVE THE CONTRACTOR FROM THE GUARANTEE OF PLANT MATERIALS AS DESCRIBED ABOVE ARE THOSE WHICH CAN BE SHOWN ARE A DIRECT RESULT OF IMPROPER CARE OR WATERING BY THE OWNER AFTER THE MAINITENANCE PERIOD AND DURING THE GUARANTEE PERIOD.
   C. THE CONTRACTOR, WITHIN FIFTEEN (15) DAYS AFTER RECEIVING WRITTEN NOTIFICATION BY THE OWNER, SHALL REMOVE AND REPLACE ALL GUARANTEED PLANT MATERIALS WHICH FAIL TO MEET THE REQUIREMENTS OF THE GUARANTEE. REPLACEMENT SHALL BE MADE WITH PLANT MATERIALS AS INDICATED OR SPECIFIED ON THE ORIGINAL PLANS, AND ALL SUCH REPLACEMENT MATERIALS SHALL BE GUARANTEED AS SPECIFIED FOR THE ORIGINAL MATERIALS.

PLANT MATERIAL SCHEDULE

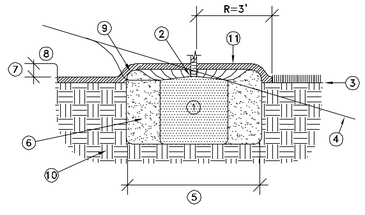
SYM.	QTY.	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
TREES					
ACC	1	Abies concolor 'Candicans'	Candicans Fir	6' HT.	
CC	3	Cercis canadensis	Eastern Redbud	2" CAL.	
CLA	3	Crataegus lavallei	Carriere Hawthorn	2" CAL.	
GTS	6	Gleditsia triacanthos 'Shademaster'	Shademaster Honeylocust	2" CAL.	
GTS	1	Gleditsia triacanthos 'Shademaster'	Shademaster Honeylocust	4" CAL.	
LT	1	Liriodendron tulipifera	Tulip Tree	2" CAL.	
SHRUBS					
CDC	22	Cotoneaster dammeri 'Coral Beauty'	Coral Beauty Cotoneaster	5 GAL.	
CSB	16	Cornus sericea 'Baileyi'	Red Osier Dogwood	5 GAL.	
FAD	4	Forsythia 'Arnold Dwarf'	Arnold Dwarf Forsythia	5 GAL.	
JHL	17	Juniperus horizontalis 'Limeglow'	Limeglow Juniper	5 GAL.	
MAC	13	Mahonia aquifolium	Oregon Grape	5 GAL.	
NDO	6	Nandina domestica	Heavenly Bamboo	5 GAL.	
PC	4	Prunus cistena	Purple Sand Cherry	5 GAL.	
PFA	6	Potentilla fruticosa 'Abbottswood'	Abbottswood Potentilla	5 GAL.	
PFK	35	Potentilla Fruticosa 'Kathryn Dyke'	Kathryn Dyke Potentilla	5 GAL.	
PMM	60	Pinus mugo mugus 'Pumilio'	Shrubby Swiss Mountain Pine	5 GAL.	
RAG	14	Rhus aromatica 'Grow Low'	Grow Low Sumac	5 GAL.	
RAL	4	Ribes alpinum	Alpine Currant	5 GAL.	
RAU	27	Ribes aureum	Golden Currant	5 GAL.	
RGL	17	Rhus glabra laciniata	Cutleaf Sumac	5 GAL.	
SBC	69	Spiraea x bumalda 'Crispa'	Crispa Spiraea	5 GAL.	
VRA	11	Viburnum x rhytidophylloides 'Alleghany'	Leatherleaf Viburnum	5 GAL.	
PERENNIALS & GRASSES					
AR	4	Agastache rupestris	Hyssop	1 GAL.	
CAK	26	Calamagrostis x. acutiflora 'Karl Forester'	Feather Grass	1 GAL.	
EPM	8	Echinacea purpurea 'Magnes'	Purple Coneflower	1 GAL.	
HSO	196	Hemerocallis 'Stella de Oro'	Stella de Oro Daylily	1 GAL.	
VMB	5787	Vinca minor 'Bowles'	Bowles Periwinkle	36/flat (161 flats)	



1. 8 INCH SQUARE CONCRETE MOW STRIP (MIN 2000 PSI AT 28 DAYS)
2. FINISH GRADE AT 2" FOR GROUNDCOVER AREAS
3. FINISH GRADE AT 1" FOR LAWN SEEDED AREAS
4. 1/2" RADIUS TROWELED EDGES (TYP.)
5. #3 REBAR CONT. (LAP 12" AT SPLICES)
6. 6 INCHES OF TOPSOIL
7. UNDISTURBED OR 90% COMPACTED SUBGRADE

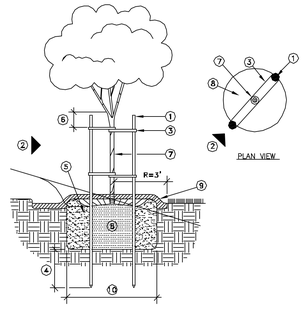
NOTE: PROVIDE CONSTRUCTION OR CONTROL JOINTS AT 5' O.C. MAX. AND EXPANSION JOINTS WHERE MOWSTRIP ABUTS ANY MASONRY TYPE IMPROVEMENT.

A CONCRETE MOW STRIP
NTS



1. ROOTBALL
2. CROWN – 1"-2" ABOVE FINISH GRADE
3. FINISH GRADE
4. FINISH GRADE AT SLOPE (WHERE OCCURS)
5. 3x ROOTBALL DIA. MIN. (UNLESS TREE DETAIL SHOWS OTHERWISE)
6. BACKFILL MIX (SEE NOTES)
7. 2"
8. TOP OF PAVING
9. 3" HIGH WATERING BASIN
10. UNDISTURBED OR 90% COMPACTED SOIL
11. 3" LAYER SHREDDED BARK MULCH AROUND EACH TREE IN 3' RADIUS CIRCLE

B TREE/SHRUB PLANTING DETAIL
NTS



1. 2" DIA. x 10' STRAIGHT WOODEN STAKE (2 REQUIRED)
2. PREVAILING WIND DIRECTION
3. V.I.T. CINCH-TIE VINYL TREE TIE (2 PER STAKE, LENGTH AS REQ'D). SECURE TO STAKE W/GALV. NAIL, 1 PER TIE
4. 24" MIN.
5. SEE TREE/SHRUB PLANTING DETAIL
6. 6" MAX.
7. TREE TRUNK
8. ROOTBALL
9. 3" LAYER SHREDDED BARK MULCH AROUND EACH TREE IN 3' RADIUS CIRCLE (WHEN IN TURF)
10. 3x ROOTBALL DIA. MIN.

C DOUBLE TREE STAKING
NTS

NOTES:

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